Sheilla Megagupita Putri Marendra. 125100907111005 Phytoremediation of *Batik* Liquid Waste Using Water Hyacinth and *Kayu Apu* at *Griya Alam Batik* Industry Pasuruan. Skripsi. Advisor: Dr. Ir. Ruslan Wirosoedarmo, MS and Dr. Ir. J. Bambang Rahadi W, MS

SUMMARY

The development of *batik* industry impacts the environment. The Ministry of Environment identifies that *batik* industry is one of the worst river polluters in Indonesia. The last process of such industry produce liquid waste contains metals and organic materials. Phytoremediation technic in this research uses water hyacinth *(Eichornia crassipes)* and *kayu apu (Salvinia cucullata)* in order to reduce the value of BOD and COD at *Griya Alam Batik* Industry Pasuruan. The method which is applied is experiment method by using Complete Random Design (RAL) in 2x3 factorial. The objective of this research is to determine the effective concentration of *batik* liquid waste in phytoremediation process on water hyacinth and *kayu apu,* identify the BOD, COD, Pb, Cr before and after the cultivation conducted, while the acidity (pH) and the temperature used as the supporting parameters. In addition, it's conducted to discover the ability of water hyacinth and *kayu apu* in every waste concentration that could improve the water quality of liquid waste at *Griya Alam Batik* Industry Pasuruan

The treatment conducted in green house by using PVC pipe and translucent plastic with the width dimension of 1.7 m 3 m long and 1.5 m high to hold 18 basin of waste volume which use on every 12 liter treatment. Acclimatization process is done within 7 days, while the water waste concentration used are waste water concentration of 0% (as control), 20%, and 40% at each types of plants. The system which is applied is batch system with 14 day time periods, subsequently the changes of BOD and COD is observed.

The result of the research shows that in concentration of 0% the value of BOD and COD tends to increase in both plants. Declines of efficiency rates of BOD in concentration of 20% for

water hyacinth and *kayu apu* is 34.68% and 24.69%. While in concentration of 40% for water hyacinth and *kayu apu* is 24.46% and -6.38%. Declines of efficiency rates of COD in waste water concertation of 20% for water hyacinth and *kayu apu* is 23.43% and 21.12%. Meanwhile in waste water concentration of 40% for water hyacinth and *kayu apu* is 23,25% and 9,00%. Although after phytoremediation process conducted the value of Bod and COD inclines to decrease, it however, has not satisfy the quality standard set in East Java Governor Regulation No. 72 Year 2013. Based on the research, *batik alam* waste do not contain lead (Pb) and Chromium (Cr). The decrease of BOD and COD contents in water hyacinth is higher than *kayu apu.* Therefore, it can be inferred that water hyacinth is more effective to reduce BOD and COD in *batik alam* liquid waste.

Key Words: BOD *(Biological Oxygen Demand)*, COD *(Chemical Oxygen Demand),* Water Hyacinth, Phytoremediation, *Kayu Apu*, *Batik Alam* Liquid Waste